ON FIRE-PROOF BUILDINGS.

Mr. BRAIDWOOD, in his paper "On Fire-proof Buildings," read at the Institution of Civil Engineers, on the 27th ult., demonstrated, by a collection of specimens of metal from buildings that had been destroyed by fire, that occasionally the temperature in the conflagration of large buildings rose almost to the melting point of cast-iron, and that, even in a small fire, beams and columns of cast-iron would be so affected by the heat and the jets of water upon them, that they would probably be destroyed, and sometimes cause a fearful loss of life, as in many of the so-called fire-proof warehouses of the city: a number of persons employed on the premises slept in the upper floors, and, if the lower beams gave way, the whole would be dragged down suddenly; whereas timber beams resisted fire some time, and allowed time for the inmates to escape.

Another point which the author considered had not been sufficiently insisted on, was the derangement of the brickwork by the expansion of the iron beams at high temperature, and its sudden contraction on the application of cold water; and, also, from the mortar becoming pulverised by the excessive heat—instances of which have been known to occur.

The following were the principles on which Mr. Fairbairn had proposed to construct fire-proof buildings:—

1. The whole of the building to be composed of incombustible materials, such as iron, stone, or brick.

2. That every opening or crevice communicating with the external atmosphere be kept closed.

3. An isolated stone or iron staircase to be attached to every story, and to be furnished with a line of water-pipes communicating with the mains in the street.

4. The different warehouses to be divided by strong partition walls, and no more openings to be made than are absolutely necessary.

5. That the iron columns, beams, and brick arches be of a strength sufficient not only to support a continuous dead pressure, but also to resist the force of impact to which they are subject.

Lastly. That in order to prevent the columns from being melted, a current of cold air be introduced into the hollow of the columns from an arched tunnel under the floors.

Mr. Braidwood submitted that large buildings containing considerable quantities of combustible goods, and constructed on the usual system, were not practically fire-proof; and that the only construction which would render such buildings safe, would be groined brick arches, supported by pillars of the same material laid in cement. The author was also of opinion, that the loss by fire would be much reduced if warehouses were built of a more moderate size, and completely separated from each other by strong party-walls, instead of being constructed in immense ranges, into which, when fire had once penetrated, it set at defiance all efforts to extinguish it.

In the discussion which ensued, it was generally acknowledged that the principles upon which many buildings, particularly dwellings, were constructed, were very erroneous. It was argued, that even with the ordinary materials, if attention was paid to filling-in the partitions and ceilings, as practised in France, and mentioned in Professor Hosking's book on the regulation of buildings; using slate or stone for the stairs, as from its present cheapness might be done, taking care to support the steps properly, a fire would spread very slowly, and would allow ample time for the escape of the inhabitants.*

At the following meeting (Tuesday, March 6) the discussion was renewed, and extended to such a length as to preclude the reading of any paper.

It was remarked, that the consideration of what was the actual loss of strength of cast-iron, under different degrees of elevation of temperature, was of vital importance. It appeared, from the evidence of Fairbairn's and Hodgkinson's experiments, that there was very little difference of strength between iron, at a temperature below freezing point, and when raised to nearly 600 degrees Fahrenheit. When, however, cast-iron columns and beams were practically subjected to the draught, or current of air, of a tremendous fire, in an extensive warehouse filled with combustible goods, and at the same time receiving large quantities of water from the engines, they must fail, either by melting or crushing.

It appeared, that all the means of arresting fires generally failed, when there was a large area on fire, and that the only effective means of prevention would be, to have smaller and detached warehouses, or separating walls within the larger storehouses; but, inasmuch as this was a very expensive mode of building, and the land where warehouses were required was very costly, it became entirely a mercantile question, whether it was better to lay out a large capital in making a building perfectly fireproof, and providing such means as were in use in a mill at Oldham, for deluging the rooms, on an alarm of fire, or pay an insurance and incur a certain amount of risk.

It was shown, that the system of constructing mills containing machinery, with iron beams and brick arches, was as much for the purpose of avoiding the tremulous movement imparted by wooden beams and floors, as for avoiding the risk of fire; for such were the precautions and care in the mills, that very few were destroyed by fire. It was suggested, that bricks might be made expressly of the proper form to surround the slight iron columns used in buildings, and thus completely protect them from any injury from fire.

* We are surprised to find Mr. Hosking's book so much less known than it deserves to be.

MANUFACTURES AND DECORATIONS AT THE SOCIETY OF ARTS.

A LARGE number of persons assembled in the Society's rooms on Wednesday evening at the opening of the third annual exhibition of specimens of recent British manufacture and decorative art. Sir John Boileau took the chair, in the absence of the Duke of Buccleugh, who was expected, while the energetic secretary of the society, Mr. Scott Russell, read a report, congratulating the members on the important character of the present collection, and the progress of the society (it now numbers 569 subscribers), and entering into some particulars as to the award of prizes.

The exhibition is particularly rich in works in gold and silver, to which her Majesty, amongst others, has contributed.

At the suggestion of Prince Albert, prizes were offered for wood-carvings, executed by artisans who were not professional wood carvers, with the view of encouraging a home occupation. The result appears satisfactory as a commencement: the first prize was awarded to G. Cook, son of the gate-keeper, at Hyde-park-corner.

There is a collection of paper-hangings at which we may look when the room is less crowded.*

* We have received the following from a correspondent:—"At the exhibition of recent British manufactures and decorative art, at the house of the Society of Arts, there is a copy of the famous shield modelled by Pitts, and the catalogue states that a prize has been awarded to Messrs. Hunt and Roskill for the exhibition of this shield of Æneas. It would be interesting to the public to know on what ground this prize is awarded: is it for the excellence of the electro-type deposit, or simply for the exhibition of the work of another? I presume the latter,—as numerous wealthy manufacturers and dealers figure prominently in the list as exhibitors, while little is said or known of the artists whose works they parade. The wording of the catalogue with regard to this shield is so ambiguous, that many persons may suppose Pitts never completed the same; and it is desirable that the public should know that he did so. Pitts, after modelling this shield, executed a cast, finely finished, in plaster of Paris, on: this cast was seen by many of the Royal Academicians and most members of the Graphic Society,—and, if my memory do not fail me, it was exhibited at Somerset House. After the completion of the plaster shield, he commenced the execution of a copy in silver, after the old manner of working silver—viz., by taking a cast, in pitch and resin, of one of the compartments of the shield, and laying over it a sheet of silver, and by pressure and hammering bringing the silver to the form of the pitchy model. The work was then finished by the punch and the graver, and such tools as are employed in silver-chasing. He had completed several of these plates, when, in a fit of bodily and mental anguish and despair, aggravated by poverty staring him in the face, he terminated his existence. He left behind him, besides this shield, another, called by him the shield of Hercules; and it would be curious to know what sum his poor widow and children received for these models; also what went with his beautiful group—the Pleiades adorning Night—and some other of his works. The shield of Æneas is the finest composition in the present exhibition; and it is melancholy to think that wealthy exhibitors are receiving a testimonial for the work, while the poor artist, whose poetical genius entered into the spirit of Virgil, and gave form to this grand work, lies forgotten in his grave." A.

ART-UNION OF LONDON.

IT will be remembered that the council of the Art-Union of London offered the sum of 100*l.* for an original bas-relief in plaster, on a base of 24 inches by 8 inches high, to be afterwards engraved by the any-glyptograph process, for general distribution, to the subscribers of the current year, in addition to the "Sabrina."

In reply to this advertisement, twenty-five bas-reliefs were sent in on the 1st inst., bearing the following titles:—

1. Slaughter of the Innocents.
2. The Entry into Jerusalem.
3. The Death of Juturna.
4. Greatheart's Conquest over Giant Maul.
5. A Grecian Harvest Festival.
6. Pilgrims to Jerusalem.
7. The Entrance of Richard II. and Bolingbroke into London.
8. Reception of Henry VIII. and Emperor Charles V. by Cardinal Wolsey.
9. The Death of Boadicea.
10. Hermione.
11. Comus offering the Cup to the Lady.
12. Suffer little Children to come unto me.
13. Christ entering Jerusalem riding on the Ass.
14. Orpheus.
15. The Lady rescued by her Brothers.
16. A Triumphal Procession.
17. Jubal.
18. The Fall of Satan.
19. St. Paul preaching.
20. Hope the allaying.
21. The Brothers rush in with drawn Swords (Comus).
22. The Beggar died, and was carried by the Angels into Abraham's Bosom.
23. Acteon.
24. Britannia Triumphant: and
25. (Unfinished) Train up a Child in the way he should go.

After examination, the council resolved that the prize of 100*l.* be adjudged to No. 13, as best adapted for the purpose advertised,—and opening the letter sent in with the device marked on No. 13, it was found to contain the name of John Hancock, 4, Brecknock Crescent, and 101, Stanhope-street, Mornington Crescent.

They afterwards decided that, in consequence of the merit of the bas-relief No. 9, overtures should be made to the artist for the purpose of purchasing it for the use of the society. This was found to be by Henry Hugh Armstead, of 37, Liquorpond-street.

The subscription-lists will close on the 31st.

TOPOGRAPHY OF JERUSALEM.

WHAT WAS MILLO?

IN the interesting description of Jerusalem given in your pages, the writer states that a "*deep valley, called Millo*, separated Acra from Moriah." This, I venture to observe, is a mistake, there being no authority whatever for the supposition that there was a *valley* or district of any kind within the walls of Jerusalem called by that name. Several old writers have entertained the opinion that the *causeway* formed in the valley between Mount Zion and Mount Moriah was the Millo in question, but the weight of authority, based on the evidence of Scripture, is in favour of another view of the subject.

The "House of Millo" is referred to (Judges ix. 6, 20; 2 Kings xii. 20). "He (Hezekiah) built up all the wall that was broken, and raised it up to the towers, and *repaired Millo in the city of David*, and made darts and shields in abundance," (2 Chronicles xxxii. 5). "So David dwelt in the fort, and called it the city of David, and David built round about from Millo and inward," (2 Samual v. 9). "Solomon built Millo, and repaired the breaches of the city of David his father," (1 Kings ix. 24). These numerous instances in which Millo is referred to, and the express terms used in several of the passages to denote its locality, place it beyond doubt, first, that Millo was a *building*—one of distinction both as to position and destination, and secondly, that it stood within or in close proximity to, the bulwarks of the city of David. The expression, that David "built round about from Millo and inward," favours the supposition that the "house of Millo" was a building of note, that the work performed was extensive, and that a great distance

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